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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/402,112    02/18/00    KAWAKAMI

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IM22/0206

| EXAMINER |
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VERSTEEG, S

| ART UNIT | PAPER NUMBER |
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1753

DATE MAILED:

02/06/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/402,112

Applicant(s)

KAWAKAMI ET AL.

Examiner

Steven H VerSteeg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 & 8.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of claims 5 and 6 in Paper No. 9 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: R1 and BR. Correction is required.

### ***Specification***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length (37 CFR 1.72) since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
5. The specification that has been entered and that is currently being examined is the translation of the international application into English that was filed September 29, 1999

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including the translation of the Annexes also filed September 29, 1999. The substitute specification was not entered because it did not comply with 37 CFR 1.125.

6. The disclosure is objected to because of the following informalities: "the" needs to be inserted before "following" on page 1, line 16; "it" needs to be inserted before "is" on page 2, line 9; "in" needs inserted after "effective" on page 2, line 9; "T" and "V" are mentioned on page 4, line 24 as being in Figure 37, but they are not present in Figure 37; "A", "B", and "F" are mentioned on page 5, lines 11-12 as being in Figure 48, but they are not present in Figure 48; and "a" needs to be inserted after "as" on page 7, line 24.

Appropriate correction is required.

***Claim Rejections - 35 USC §§ 102 and 103***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 5 and 6 are rejected under 35 U.S.C. 102(a) as being anticipated by *Fabrication of submicrometre 3D periodic structures composed of Si/SiO<sub>2</sub>* by Kawakami.

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10. For claim 5, Applicant requires a three dimensional periodic structure that is fabricated by sequentially and periodically forming at least two kinds of layers including a layer mainly of SiO<sub>2</sub> and a layer mainly of Si on a substrate having a two-dimensionally periodically recessed or projecting portions. It is formed by carrying out sputtering and sputter etching alternatively or simultaneously at least in a part of the forming while keeping a pattern of the recessed or projecting portions.

11. For claim 6, Applicant claims a method of fabricating a three-dimensional periodic structure by sequentially and periodically forming at least two kinds of layers including a layer mainly of SiO<sub>2</sub> and a layer mainly of Si on a substrate having a two-dimensionally periodically recessed or projecting portions. It is formed by carrying out sputtering and sputter etching alternatively or simultaneously at least in a part of the forming while keeping a pattern of the recessed or projecting portions.

12. Kawakami discloses a 3D structure (title). The structure is made by alternately depositing silicon dioxide and silicon onto the substrate (page 50). The layers are formed by bias sputtering which involves sputter deposition and sputter etching occurring simultaneously (page 50). The structures have two-dimensionally periodically recessed or projecting portions (Figure 3). Therefore, Kawakami discloses the structure of claim 5 (the 3D structure with the alternating layers of silicon and silicon dioxide) and the method of making the 3D structure claimed in claim 6 (and by way of a product by process in claim 5).

13. Claim 5 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5,600,483 to Fan *et al.* (Fan).

14. Claim 5 is described above in Paragraph 9. Fan discloses a three dimensionally structure (title). The structure comprises alternate layers of silicon and silicon dioxide (col. 3, l. 17-26). The layers have two-dimensionally periodically recessed or projecting portions (Figure 1). The method of making the structure involves sputter depositing the Si layer and etching it and then, depositing the silicon dioxide without etching. Thus, the method of making the structure is different than the method utilized in the product-by-process method of claim 5. Because the resulting structure appears to be the same as claimed by Applicant, it is obvious, if not inherent, that the same structure claimed by Applicant in claim 5 is present in Fan.

#### ***Information Disclosure Statement***

15. The information disclosure statement lists several "Y" references. The examiner has considered the references and believes that the combination of the "Y" references does not obviate Applicant's invention. The "Y" references are: JP 3-3285 (JP '285), JP 62-289804 (JP '804), and JP 58-42003 (JP '003). None of the references indicate sequentially or periodically deposited or depositing of silicon and silicon dioxide.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (703) 305-4473. The examiner can normally be reached on Mon - Thurs (7:30 AM - 5:00 PM) & alternate Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Steven H VerSteeg

Examiner

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February 6, 2001